A NEW SPECIES OF *TRAPEZITES* HÜBNER (LEPIDOPTERA: HESPERIIDAE) FROM WESTERN AUSTRALIA

Andrew A.E. Williams[1], Matthew R. Williams[2] and R.W. Hay[3]

[1]*Department of Conservation and Land Management, W.A. Wildlife Research Centre PO Box 51, Wanneroo, WA 6065*

[2]*Department of Conservation and Land Management, 50 Hayman Road, Como, WA 6152*
[3]*8 Klem Avenue, Manning, WA 6152*

Abstract

Trapezites atkinsi sp. nov. is described from south-western Western Australia and, on present knowledge, is limited to a small area of coastal heathland at Windy Harbour. The pupal stage is described and illustrated. The larval foodplant is *Acanthocarpus preissii* Lehm. (Dasypogonaceae).

Introduction

In reviewing the Western Australian species of *Trapezites* Hübner, Mayo and Atkins (1992) drew attention to a form from Windy Harbour, which they tentatively assigned to the *T. sciron* complex. Specimens of this skipper were first collected by David Yeates on 11 November 1989; subsequently further specimens were taken in 1989, 1990 and 1995. Examination of this additional material confirmed earlier suspicions that the original specimens represented a previously unrecognised species of *Trapezites*. *T. atkinsi* sp. nov. is closely allied to three other Western Australian species of *Trapezites*: *T. sciron* Waterhouse & Lyell, *T. argenteoornatus* (Hewitson) and *T. waterhousei* Mayo & Atkins.

Abbreviations

The following abbreviations refer to institutional and private collections: AA = Andrew Atkins Collection, Newcastle; RWH = R. W. Hay Collection, Perth; HHB = H. H. Bollam Collection, Chittering; WADA = Western Australian Department of Agriculture Collection, Perth; CALM = Department of Conservation and Land Management Collection, Perth; WAM = Western Australian Museum, Perth.

Trapezites atkinsi sp. nov.

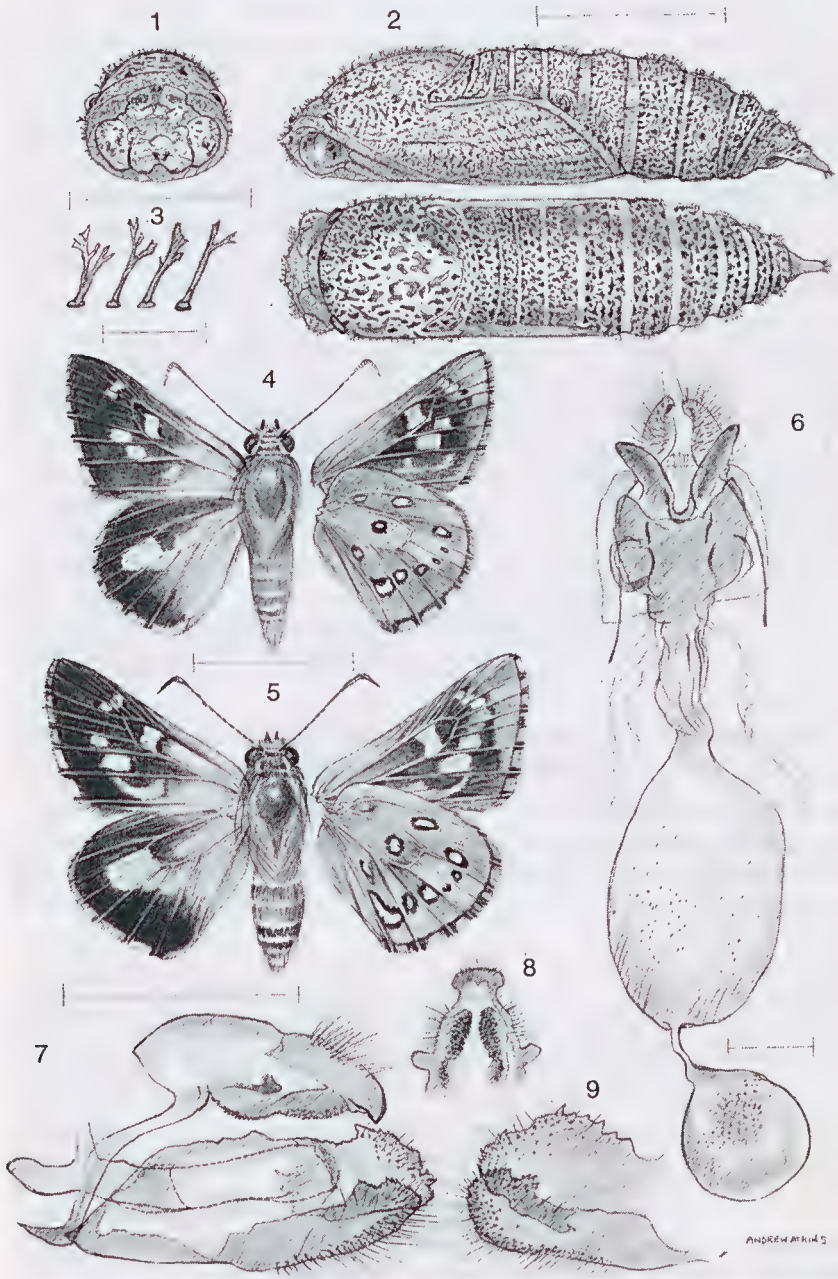
(Figs 1-9)

Types. WESTERN AUSTRALIA: *Holotype* ♂, Windy Harbour, 29.x.1995, low coastal heath above cliffs with *Acanthocarpus*, 34°50'13"S 116°00'49"E., A.A.E. Williams, Reg. No. WAM 1998/0013 (in WAM). Paratypes (11 ♂, 8 ♀): 1 ♀, Windy Harbour, 14.xi.1995, ex pupa in shelter on *Acanthocarpus preissii*, 34°50'13"S 116°00'49"E., A.A.E. Williams, Reg. No. WAM 1998/0014 (in WAM); 1 ♀, Windy Harbour, 8.xi.1995, ex pupa in shelter on *Acanthocarpus preissii*, 34°50'13"S 116°00'49"E., A.A.E. Williams; 1 ♂, Windy Harbour, 8.xi.1990, M.R. Williams; 1 ♂, Windy Harbour, 29.x.1995, M.R. Williams; 2 ♀, Windy Hbr., 34°50'13"S 116°00'49"E., ex pupa, 2 & 7.xi.1995, M.R. Williams (all in CALM); 1 ♂,

Windy Harbour, 26.xi.89, R.H.; 1 ♂, Windy Harbour, 8.xi.1990, M.R. Williams (RWH); 3 ♂, Windy Harbour, Pt D'Entrecasteaux, 19.xi.1989, D. Yeates, each with an additional label, Agriculture (Dept) Western Australia, with an identifying database number 41347, 41348 or 41349; 1 ♀, same data but number 41350, with genitalia in attached vial; 2 ♂, Windy Harbour, 24.xi.1989, H. Bollam, both with additional labels as above but numbered 41345 and 41346, both with genitalia in attached vials (all in WADA); 1 ♂, Windy Harbour form, xi.1989, H. Bollam; 1 ♂, Windy Harbour, 8.xi.1990, M.R. Williams; 1 ♀, Windy Harbour, 29.x.1995, reared ex pupa, A. Atkins, 1 ♀, Windy Harbour, 1.xi.1995, reared ex pupa, A. Atkins; 1 ♀, Windy Harbour, 6.xi.1995, reared ex pupa, A. Atkins (all in AA).

Male (Fig. 4). Head dark brown with hair-tufts of light brown, beneath greyish-cream; antennal shaft dark brown above, segmented with yellowish scales, greyish-cream beneath with darker segments, club dark brown to black, nudum 14-15 segmented black; labial palpus black above, cream beneath, third segment short and black. Thorax above black with brown hair scales, posterior with long yellowish-grey hair-scales; legs pale brown, hind leg often with two pairs of spurs. Abdomen brown, with distal edges of segments pale yellowish-brown, posterior hair-tuft pale brown, beneath yellowish-grey. Forewing length 14 mm, with costa almost straight, apex pointed, termen almost straight; above centrally mid-brown to dark brown with pale greyish yellow hairs on termen, base and central (median) area with yellowish grey hairs, three to four subapical pale yellow spots in area between R3, R4, R5 and M1 diagonally placed across wing, a yellowish cell spot and two yellowish-orange spots, one between M3 and CuA1 and a slightly larger spot between CuA1 and CuA2, two confluent yellowish-orange spots forming an arc or crescent in median area between CuA2 and 1A+2A, sometimes reduced or nearly absent; cilia pale grey-brown; beneath, costa, apex, inner margin to tornus and small area above median spots yellowish-grey, distad of which are two dark spots, median area dark brown to black, all spots as above but slightly paler; cilia cream with slightly darker chequering. Hindwing slightly rounded, above dark brown, yellowish hairs arising from base to median area and extending along inner margin to subtornal area, a large central yellow-orange patch of scales; cilia pale greyish-yellow; underside pale yellowish-grey, basal area greyish-brown to grey, central patch as above but pale yellow, six subterminal and three

Figs 1-9. Pupal stage and adults of *Trapezites atkinsi* sp. nov. (1) frons of pupa; (2) lateral and dorsal view of pupa; (3) pupal setae; (4) adult male (left upperside, right underside); (5) adult female (left upperside, right underside); (6) female genitalia (dissected from specimen #41350 in WADA collection); (7) male genitalia including outside left valva (dissected from specimen labelled Windy Harbour form, xi.1989, H. Bollam, in AA collection); (8) uncus (ventral); (9) posterior section of outside right valva. Scale bars: Figs 1-2 = 5 mm; Fig 3 = 0.5 mm; Figs 4-5 = 10 mm; Fig 6 = 1 mm; Figs 7-9 = 2 mm.


1
2
3
4
5
6
7
8
9
ANDREW ATKINS

median black spots centred with silvery-white scales (the largest subterminal spot being near tornus); cilia cream with slightly darker chequering.

Genitalia (Figs 7-9). Uncus/tegumen broad with uncus (Fig. 8) tapered, rounded and blunt, slightly toothed at 'T'-shaped tip, gnathos broadly rounded and moderately toothed distally, dorso-lateral flanges short, simple and distally rounded, directed slightly posterior; saccus short, beak-shaped, connected to a simple, broadly curved vinculum; left valva broad, toothed and sclerotized posterio-dorsally, harpe, broad, slightly dentate and short sacculus directed dorsally, ampulla rounded and blunt, right valva slightly more dentate and toothed; aedeagus short and broad, posterior tip (postzone) expanded, semi-cupped shape; juxta simple and saddle-shaped.

Female (Fig. 5). Similar to male, but forewing and hindwing with apex and termen more rounded, spots on forewing larger, with the two confluent spots forming a crescent between CuA2 and 1A+2A prominent. Spots on both wing surfaces larger and more prominent. Forewing length 15 mm.

Genitalia (Fig. 6). Papilla analis broad and triangular, apophysis long, straight and slender; sterigma plates with lamella postvaginalis elliptical, long, thin and steeply 'V'-shaped with deeply rounded central groove, lamella antevaginalis simple, broadly 'U'-shaped and slightly sclerotized; caudal chamber moderately broad and short; ductus bursae short and spreading; corpus bursae broadly ovoid with creased and slightly sclerotized base and a short, spherical accessory pouch attached by a short, narrow neck.

Distrbution

Trapezites atkinsi is known only from a small area of coastal heathland at Windy Harbour, Point D'Entrecasteaux, in south-western Western Australia.

Etymology

The species is named in honour of Mr Andrew Atkins, in recognition of his contributions to Australian entomology over many years and particularly his contribution to the study of Hesperiidae.

Variation

There is slight variation in the size of the median spot along the inner margin of the forewing; generally this is distinctively crescent-shaped. In some specimens the underside of both wings is more evenly pale yellowish-brown. There is also slight variation in the size of the spots on the underside of the hindwing.

Life History

Foodplant. Acanthocarpus preissii Lehm. (Dasypogonaceae).

Pupa (Fig. 2). Length 18 mm; greyish-brown covered with a prominent mottled dark brown maculation and branched setae (Fig. 3); pupal cap (operculum) (Fig. 1) rough, sclerotized and subelliptical to quadrate, lightly

covered with branched setae and mottled maculation, upper area extended to quadriform 'turret', lower area strongly dentate; cremaster short, tapered and decurved with rounded tip.

Discussion

T. atkinsi resembles all other Western Australian species of *Trapezites* in wing-shape, general pattern and colour of both upperside and underside. It is most similar to *T. argenteoornatus* in having prominent yellowish-orange maculation, especially that of the upperside of the hindwing. However, *T. atkinsi* is somewhat larger, the wings lack prominent chequered cilia, and the silver spots on the underside of the hindwing are smaller and on a yellowish-grey ground.

The broadly rounded valvae tips, ampulla, broadly rounded gnathos and dorso-lateral processes of the uncus in the genitalia distinguish males of this species from other Western Australian *Trapezites* species (Mayo and Atkins 1992, Andrew Atkins, pers. comm.). Female genitalia of *T. atkinsi* are differentiated by the very long, flat ovoid extensions to the lamella post vaginalis plate and a broad 'U'-shaped lamella antevaginalis plate. In profile the genitalia of both sexes appear closer to *T. sciron eremicola* Burns than to *T. argenteoornatus*.

The pupa of *T. atkinsi* is strongly mottled and resembles that of *T. argenteoornatus*, but the operculum is higher and dentate at the base and has a distinctive raised dorsal area. Larval and pupal shelters are similar to those of *T. argenteoornatus*. Both species are recorded on the foodplant *A. preissii* but *T. argenteoornatus* has not been recorded south of Bunbury.

Larvae and pupae have been found in shelters on the foodplant or on nearby vegetation. The foodplant grows along coastal dunes and on the top of limestone headlands. Adults fly in areas around the foodplants during late October and November. They "patrol" in sunshine and often settle on sheltered sandy patches.

The discovery of *T. atkinsi* brings the number of *Trapezites* species found in south-west Western Australia to four, with three of these being restricted to this area. The phylogeny of this interesting group would no doubt reward further study, as they all are very closely related. Three (*T. waterhousei*, *T. atkinsi* and *T. argenteoornatus*) are allopatric, whereas the fourth (*T. sciron*) may be sympatric or parapatric. Closer study of this group may shed further light on the complex variation observed in *T. sciron* and *T. argenteoornatus* by Mayo and Atkins (1992).

Conservation

T. atkinsi is found within D'Entrecasteaux National Park, but its apparently restricted distribution places this skipper in a vulnerable category. Our searches south-east of Windy Harbour and in seemingly identical habitats

between Yallingup and Cape Naturaliste have failed to detect further populations of the skipper.

Common name

In order to ensure consistency with proposed changes to the common names of Australian butterflies, we suggest the common name "Heath Ochre" for *T. atkinsi*.

Acknowledgments

We are grateful to David Yeates for information and discussion, to Hugh Bollam for records and material, and to John van Schagen for lending material held in the Western Australian Department of Agriculture collection. We thank Andrew Atkins for genitalia dissections and for providing the illustrations. Valuable comments on the manuscript were received from Michael Braby.

Reference

MAYO, R. and ATKINS, A. 1992. *Anisyntoides* Waterhouse (Lepidoptera: Hesperiidae): a synonym of *Trapezites* Hübner, with description of a new species from Western Australia. *Australian Entomological Magazine* **19:** 81-88.